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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/562,826

12/30/2005

Kousuke Akiyama

2005\_2076A

3778

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EXAMINER

AHMED, SHEEBA

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

01/25/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/562,826

**Applicant(s)**

AKIYAMA ET AL.

**Examiner**

Sheeba Ahmed

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

1. Amendments to claims 11, 18, and 20 have been entered. Claims 1-10 are cancelled. **Claims 11-20 are pending.**

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11-13, 16, 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billmers et al. (US 2002/0015854.)

Billmers et al. disclose a paper coating composition providing good barrier properties comprising a blend of hydrophobically modified high amylose starch and polyvinyl alcohol. The starch is modified with a hydrocarbon group of 6 to 18 carbon atoms. The starch is hydrophobically modified with hydrocarbon groups of at least 6 carbon atoms, more particularly 6 to 18 and preferably 8 to 12 carbon atoms. This hydrophobically modified starch can be prepared by reacting starch and an organic anhydride reagent. All types of fillers, pigments, dyes and rheology modifiers may be added in the usual manner to the paper product which is to be coated or sized. Such

materials include clay, talc, titanium dioxide, calcium carbonate, calcium sulfate and diatomaceous earths. Usually an effective additive amount of up to about 25% by weight can be used. The starches can be employed in amounts to provide a coating or size concentration ranging from about 0.25 to 15.0% by weight, dry basis, and preferably from about 0.5 to 5% by weight based on the weight of the finished dry paper. Within this range, the precise amount which is used will depend for the most part upon the type of pulp which is being utilized, the specific operating conditions, as well as the particular end use for which paper is desired. The use of the present starches as coatings and surface sizing agents results in paper characterized by improved water resistance, reduced porosity and increased oil resistance. *Paragraph 16 states that the modified high amylose starch may be further modified or derivatized to contain other groups in addition to the hydrocarbon chain as long as such groups do not interfere with the barrier or film forming properties provided by the hydrocarbon substituent and the starch itself. Such starches include crosslinked starches.*

Billmers et al. do not teach that the coating containing the hydrophobized starch is present in an amount of 0.5 to 20g/m<sup>2</sup>.

However, it would have been obvious to one having ordinary skill in the art to optimize the coating weight of the hydrophobized starch coating given that Billmers et al. specifically teach that the starches as coatings and surface sizing agents results in paper characterized by improved water resistance, reduced porosity and increased oil resistance.

3. Claims 14, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billmers et al. (US 2002/0015854) in view of Reiners et al. (US 6,090,871).

Billmers et al. do not state that their coating further comprises a fatty acid. However, Reiners et al. disclose polyamine-epichlorohydrin resins and polyamide-amine-epichlorohydrin resins have been employed for a long time for improving the dry and wet strength of paper. Cationic polycondensates with hydrophobic radicals, for example based on fatty acid-modified polyamines, are also suitable as sizing agents for paper. It is furthermore known that the strength of paper in the dry state can be increased by application of starch (see Background section).

Accordingly, it would have been obvious to one having ordinary skill in the art to add a fatty acid to the coating taught by Billmers given that Reiners et al. teach that doing so improves the dry and wet strength of paper.

### ***Response to Arguments***

4. Applicant's arguments filed on October 26, 2007 have been fully considered but they are not persuasive. Applicants traverse the rejections based on Billmers et al. (US 2002/0015854) and submit that Billmers fails to teach a crosslinked starch. However, the Examiner disagrees. Paragraph 16 of Billmers et al. (US 2002/0015854) specifically states that *the modified high amylose starch may be further modified or*

*derivatized to contain other groups in addition to the hydrocarbon chain as long as such groups do not interfere with the barrier or film forming properties provided by the hydrocarbon substituent and the starch itself. Such starches include crosslinked starches.*

Hence, the above rejections are maintained.

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheeba Ahmed whose telephone number is

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(571)272-1504. The examiner can normally be reached on Monday-Friday from 9am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on (571)272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Sheeba Ahmed  
Art Unit 1794  
January 21, 2008